

NEW SPECIES OF LEPTODACTYLID FROGS OF THE GENUS  
*ELEUTHERODACTYLUS* FROM THE COSÑIPATA VALLEY, PERÚ

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*Abstract.*—Five new species of the *Eleutherodactylus unistrigatus* group are named from the Amazonian slope of the Andes in Departamento Cuzco, Perú. All of the species occur in cloud forests at elevations of 1,580–2,400 m in the valley of the Río Cosñipata.

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Frogs of the genus *Eleutherodactylus* are abundant as species and individuals in the montane forests of Colombia and Ecuador, but heretofore few species have been recognized in Perú. During three excursions into the Cosñipata Valley in southern Perú in 1971, 1975, and 1977, five unnamed species of *Eleutherodactylus* were discovered. These are named and described in this paper.

The narrow, heavily forested valley of the Río Cosñipata is on the north-eastern slopes of the Cadena de Paucartambo, a front range of the Andean Cordillera Oriental in Departamento Cuzco. The Río Cosñipata is one of several streams originating high in the Andes and flowing into the Río Madre de Dios, a tributary of the Brazilian Rio Madeira, which flows into the Rio Amazonas. The valley of the Río Cosñipata is reached by road from the village of Paucartambo at 3,040 m in the dry upper Paucartambo Valley. The road leads north-northeastward for 25 km to Abra Acanacu (3,520) on the crest of the Cadena de Paucartambo. From the *abra* the road goes in a generally easterly direction to the Amazonian lowlands reached at Patria, 73 km from Abra Acanacu. Shortly after leaving Abra Acanacu the road enters the Río Cosñipata drainage; for the last 50 km to Pilcopata the road lies in the Cosñipata Valley (Fig. 1); several small settlements between Abra Acanacu and Patria consist of one or two houses each.

Abra Acanacu is above tree line; the vegetation is *puna* dominated by bunch grass (principally *Stipa*) with numerous low herbs, ferns, and mosses. Tree line is reached at 3,150 m. The upper reaches of the forest are characterized by low trees (*Polylepis*, *Baccharis*) and viney bamboo (*Chusqueia*); somewhat lower on the slopes the forest is much taller with some tree ferns and bromeliads and a luxuriant undergrowth of mosses and ferns. In the lower montane forest tree ferns are more abundant, and bromeliads and mosses are less common than at higher elevations.

In the following descriptions the designation of species groups is that of Lynch (1976), and the numerical sequence in the diagnoses follows Lynch (1974). Institutional abbreviations are: AMNH = American Museum of Natural History, KU = Museum of Natural History, University of

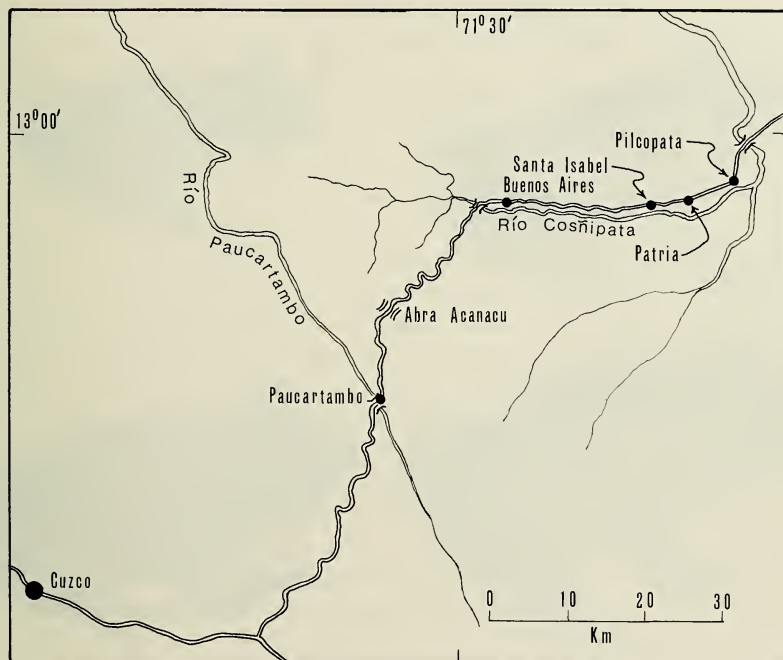


Fig. 1. Map of part of Departamento Cuzco, Perú, showing localities mentioned in text. Based on Mapa Físico Político, República del Perú, 1:1,000,000; Instituto Geográfico Militar, Lima, 1973.

Kansas, LSUMZ = Louisiana State University Museum of Zoology, MCZ = Museum of Comparative Zoology, Harvard University, USNM = National Museum of Natural History.

*Eleutherodactylus cosnipatae* new species  
(Fig. 2A)

*Holotype*.—KU 162298, an adult male, from the Río Cosñipata, 4 km SW Santa Isabel, 1,700 m, Departamento Cuzco, Perú ( $13^{\circ}05'S$ ;  $71^{\circ}18'W$ ), obtained by William E. Duellman on 10 February 1975.

*Paratypes*.—KU 138876 from 2 km WSW Santa Isabel, 1,580 m, Departamento Cuzco, Perú, obtained by William E. Duellman on 14 January 1971; KU 162299–304 from the type-locality, collected by William E. Duellman, Dana K. Duellman, John E. Simmons, and Linda Trueb on 10–11 February 1975.

*Diagnosis*.—A member of the *Eleutherodactylus unistrigatus* group characterized by: 1) skin on dorsum shagreened with weak dorsolateral folds; skin on venter areolate; 2) tympanum and tympanic annulus prom-

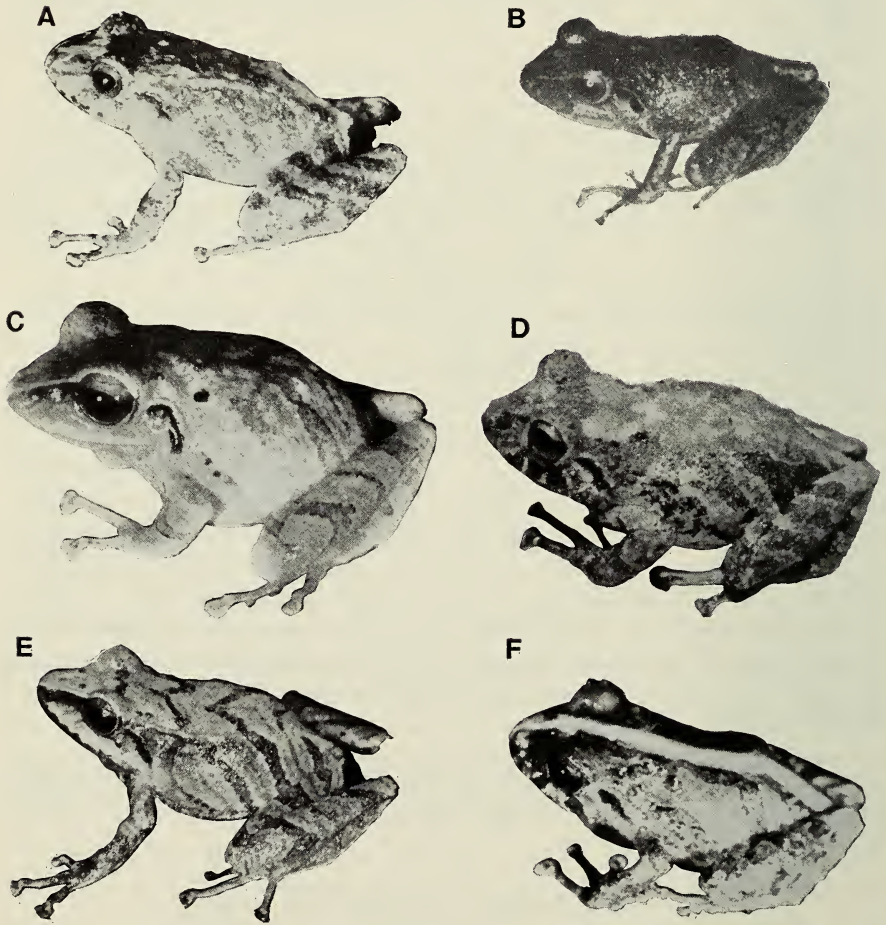


Fig. 2. New species of *Eleutherodactylus*: A. *E. cosnipatae*, KU 162298, ♂, 21.8 mm snout-vent length (SVL); B. *E. danae*, KU 138878, juv., 28.3 mm SVL; C. *E. danae*, KU 162307, ♂, 34.0 mm SVL; D. *E. lindae*, KU 162305, ♀, 39.2 mm; E. *E. pharangobates*, KU 173237, ♂, 23.8 mm SVL; F. *E. salaputium*, KU 162292, ♂, 17.9 mm SVL.

inent: 3) snout long, sloping, round in dorsal view and profile; 4) inter-orbital area flat, slightly wider than eyelid; crests absent; 5) prevomerine odontophores evident; 6) vocal slits present; vocal sac single, median sub-gular; 7) first finger shorter than second; discs truncate, twice width of digit; 8) fingers having lateral fringes; 9) ulnar folds and tubercles absent; 10) low tubercles present on tarsi; 11) inner metatarsal tubercle small, elliptical; outer tubercle small, subconical; 12) toes having lateral fringes; 13)



dorsum grayish tan with bold brown markings; venter gray with white flecks; axilla, groin, and ventral surfaces of hind limbs orange-red; snout-vent length 21.8–29.5 mm in males.

*Eleutherodactylus cosnipatae* closely resembles *E. pharangobates*, which differs by lacking lateral fringes on the fingers and toes, by lacking the orange-red coloration of the groin and thighs and by having dorsolateral folds. Red is present in these areas in *E. altamazonicus* a lowland species with a dark venter and tuberculate dorsum. The sympatric *E. danae* is larger and has the posterior thighs dark brown with cream flecks, and *E. lindae* is a much larger frog with bold brown reticulations on the venter.

*Description*.—Body robust, head longer than wide; snout long, narrow, sloping, rounded in dorsal view and in profile, protruding well beyond margin of lip; top of head flat; interorbital distance 1.25 times width of eyelid; canthus angular; loreal region distinctly concave; lips rounded, nostrils slightly protuberant laterally; internarial area barely depressed. Tympanum distinct, round, its posterodorsal margin concealed under thin supratympanic fold, separated from eye by distance equal to diameter of tympanum; tympanic annulus distinct.

Forearm moderately short and robust, lacking ulnar fold and tubercles; first toe noticeably shorter than second; fingers having weak lateral fringes extending to truncate discs, which are twice width of digit; subarticular tubercles small round; palmar tubercle round, diffuse; pollical tubercle elliptical. Hind limbs moderately short and robust; two low tubercles on dorsolateral surface of tarsus; inner tarsal fold discontinuous on distal half of tarsus; inner metatarsal tubercle small, elliptical; outer metatarsal tubercle small, subconical; lateral fringes on toes extending to expanded discs; subarticular tubercles small, subconical.

Skin on dorsum finely shagreened with weak dorsolateral folds and low tubercles on eyelids and in tympanic region in all specimens and on all dorsal surfaces in some specimens; skin on throat and belly areolate; skin on other surfaces smooth. Anal opening a puckered aperture at upper level of thighs. Prevomerine odontophores small, rounded, slightly elevated structures well behind posterior margins of small round choanae; each odontophore bearing 0–4 ( $\bar{x}$  = 2.2) teeth; vocal slits and single, median, subgular vocal sac present.

*Coloration in preservative*.—Dorsum grayish tan to reddish brown with dark brown markings consisting of: broad loreal stripe, labial bars, interorbital bar, 3–4 chevrons on body, 2 bars on forelimb, 3–4 bars on each thigh, shank, and foot; 2–3 diagonal marks on flanks; belly cream; throat gray with white flecks; ventral surfaces of hind limbs orange-tan.

*Coloration in life*.—Dorsum grayish tan with brown markings; throat and belly with white flecks; axilla, groin, and ventral surfaces of hind limbs bright orange-red; iris bronze with median horizontal red streak.

*Measurements*.—The eight males comprising the type-series have the

following dimensions (in mm); the holotype is the smallest individual, and the mean values are given in parentheses after the observed range: snout-vent length 21.8–29.5 (25.1), tibia length 12.2–15.6 (13.6), foot length 11.4–13.3 (12.3), head length 8.7–12.2 (10.1), head width 8.3–10.4 (9.3), interorbital distance 2.7–3.8 (3.1), width of eyelid 1.9–2.8 (2.46), eye-nostril 2.4–3.1 (2.74), diameter of eye 2.7–4.0 (3.2), diameter of tympanum 1.1–1.8 (1.43).

*Remarks.*—Except for one individual that was under a rock by day, all specimens were calling from low vegetation in cloud forest at night. The call is a soft “wraank.”

*Etymology.*—The specific name is derived from the Quechuan name for the valley—Cosñipata.

*Eleutherodactylus danae* new species  
(Fig. 2B–C)

*Holotype.*—KU 162307, an adult male from the Río Cosñipata, 4 km (by road) SW of Santa Isabel, Departamento Cuzco, Perú, 1,700 m (13°05'S; 71°18'W), one of a series collected on February 1975 by William E. Duellman, Dana K. Duellman, John E. Simmons, and Linda Trueb.

*Paratypes.*—KU 162308–57, MCZ 93305–10, AMNH 97987–92 collected with the holotype; KU 138878 from 2.5 km WSW Santa Isabel, 1,620 m; KU 162358–65 from 6 km NE Santa Isabel 1,270 m.

*Diagnosis.*—A member of the *Eleutherodactylus unistrigatus* group characterized by: 1) skin of dorsum finely shagreened with faint dorsolateral folds; skin on venter coarsely areolate; 2) tympanum prominent, round, about  $\frac{1}{2}$  diameter of eye; 3) snout long, sloping, round in dorsal view and in profile; 4) interorbital area flat, only slightly wider than eyelid, crests absent; 5) prevomerine odontophores distinct, triangular; 6) vocal slits present; vocal sac median, subgular; 7) first finger shorter than second; terminal discs truncate, 2.5 times width of digit; 8) fingers having lateral fringes; 9) ulnar folds and tubercles absent; 10) tubercles absent on heels and tarsi; 11) inner metatarsal tubercle large, flat, elliptical; outer metatarsal tubercle minute, subconical; 12) toes having lateral fringes and basal webbing; 13) dorsum brown with dark brown chevrons; anterior and posterior surfaces of thighs dark brown with cream flecks; venter white with or without gray flecks; 14) snout-vent length 27.3–33.8 mm in males, 37.5–45.8 mm in females.

In coloration, *E. danae* is similar to *E. conspicillatus* and *E. peruvianus*, both of which have dorsal chevrons and dark thighs with orange or red flecks. Both of those species are members of the *Eleutherodactylus fitzingeri* group and have smooth venters and the first fingers longer than the second.

*Description*.—Body moderately robust; head slightly longer than wide; snout round in dorsal view and in profile; snout protruding well beyond margin of lip, top of head flat; interorbital distance slightly greater than width of eyelid; canthus angular; loreal region barely concave; nostrils slightly protuberant laterally; internarial region flat; lips not flared. Tympanum distinct, round, separated from eye by distance nearly equal to diameter of tympanum, bordered above by thin supratympanic fold.

Forearm slender, lacking folds and tubercles; first finger barely shorter than second; fingers having lateral fringes extending to discs, which are truncate and 2.5 times as wide as digit; subarticular tubercles large, subconical; palmar tubercle large, round; pollical tubercle quadrangular. Hind limbs long, slender; tubercles absent on heels and tarsi; inner tarsal fold weak, extending about half length of tarsus; inner metatarsal tubercle large, flat, elliptical; outer metatarsal tubercle minute, subconical; lateral fringes on toes extending to expanded discs; basal webbing between third, fourth, and fifth toes; subarticular tubercles large, subconical.

Skin on dorsum finely shagreened; weak dorsolateral folds posteriorly; skin on belly and proximal posteroventral surfaces of thighs; skin on other surfaces smooth. Anal opening a puckered aperture at midlevel of thighs, bordered below by granules. Prevomerine odontophores small, elevated, triangular, widely separated medially behind level of small round choanae; each odontophore bearing 1–3 teeth. Vocal slits and median subgular vocal sac present.

*Coloration in preservative*.—Dorsum tan to brown with dark brown interorbital bar and three or four chevrons (98.6% of 72 specimens) and a pair of black spots in scapular regions; narrow diagonal dark bars on limbs. Narrow cream canthal line bordered below by dark brown; supratympanic spot black; lips tan with brown bars. Anterior and posterior surfaces of thighs dark brown with cream flecks. Venter white with black spots on belly (50%) and throat (28%).

*Coloration in life*.—The dorsum is yellowish tan to dark reddish brown with dark brown chevrons. The venter is pale yellow. The hidden surfaces of the thighs are dark brown with pale yellow spots. The iris is reddish copper.

*Measurements*.—The holotype, an adult male, has the following dimensions (in mm): snout-vent length 34.0, tibia length 19.6, foot length 17.9, head length 14.0, head width 12.8; interorbital distance 4.4, width of eyelid 3.8, eye-nostril 4.3, diameter of eye 4.7, diameter of tympanum 2.5. Measurements and proportions of 30 males followed by those of three females (means in parentheses) are: snout-vent length (SVL) 27.3–33.8 (30.9), 37.5–45.8 (41.9); tibia length/SVL .533–.642 (.594), .600–.626 (.614); foot length/SVL .493–.583 (.536), .531–.567 (.551); head length/SVL .374–.424



(.398), .410-.440 (.424); head width/SVL .341-.402 (.365), .381-.397 (.389); interorbital distance/head width .297-.388 (.338), .260-.383 (.311); eye-nos-tril/head length .296-.369 (.323), .321-.372 (.353); tympanum/eye .417-.575 (.506), .517-.617 (.557).

*Remarks.*—*Eleutherodactylus danae* is known only from elevations of 1,270–1,700 m in the Río Cosñipata Valley on the lower Andean slopes in southern Perú. All specimens were perched on low (<50 cm) herbs and ferns in cloud forest at night.

*Etymology.*—The specific name is a patronym for my daughter, Dana K. Duellman, in recognition of her youthful enthusiasm for collecting frogs in the Andes.

*Eleutherodactylus lindae* new species  
(Fig. 2D)

*Holotype.*—KU 162305, an adult female, from the Río Cosñipata, 4 km SW Santa Isabel, 1,700 m, Departamento Cuzco, Perú (13°05'S, 71°18'W), obtained by Linda Trueb on 11 February 1975.

*Diagnosis.*—A member of the *Eleutherodactylus unistrigatus* group characterized by: 1) skin on dorsum shagreened; skin on venter coarsely areolate; 2) tympanum and tympanic annulus prominent; 3) snout long, sloping, round in dorsal view and in profile; 4) interorbital area flat, one-third again as wide as eyelid, crests absent; 5) prevomerine odontophores prominent; 6) vocal slit condition unknown; 7) first finger shorter than second; terminal discs truncate, twice width of digit; 8) fingers having lateral fringes and basal webbing; 9) ulnar tubercles present; 10) tubercles absent on heels and tarsi; 11) inner metatarsal tubercle large, ovoid, spatulate; outer tubercle small, round; 12) toes having lateral fringes; 13) dorsum tan; venter cream with dark brown reticulations; 14) snout-vent length 39.2 mm in female.

Superficially, *E. lindae* resembles *E. ventrimarmoratus*, a species with shorter, more robust limbs, and large, irregular, black blotches on the belly and ventral surfaces of the shanks. The ventral coloration in other species of *Eleutherodactylus* in the southern Andes consists of either nearly uniform dark color (*E. platydactylus*, *E. salaputium*), uniform light color (*E. mendax*), or with gray or brown flecks (*E. cosnipatae*, *E. granulosus*, *E. pharangobates*). The sympatric *E. danae* has dense dark flecking ventrally, but the posterior surfaces of the thighs are dark brown with cream flecks (uniform dark brown in *E. lindae*).

*Description.*—Body robust; head wider than long; snout long, sloping, round in dorsal view and in profile, protruding slightly beyond margin of lip; top of head flat; interorbital distance one-third again width of eyelid; canthus rounded; loreal region barely concave; lips rounded; nostrils

slightly protuberant laterally; internarial area barely depressed. Tympanum round, its posterodorsal margin concealed by a supratympanic fold, separated from eye by distance equal to about 1.25 times diameter of tympanum; tympanic annulus distinct.

Forearm moderately slender, bearing row of low round tubercles on ventrolateral edge; first finger barely shorter than second; fingers having lateral fringes extending to discs, which are truncate and twice as wide as digit; fingers webbed basally; subarticular tubercles moderately large, subconical; palmar tubercle tripartite; pollical tubercle elliptical. Hind limbs moderately short, robust; tubercles absent on heels and tarsi; inner metatarsal fold curved on distal third of tarsus, encompassing two small spatulate tubercles; inner metatarsal tubercle large, ovoid, spatulate; outer metatarsal tubercle small, round; lateral fringes on toes extending to expanded discs; toes not webbed; subarticular tubercles small, subconical.

Skin on dorsum finely shagreened with low fold from posterior corner of eyelid to scapular region, two low tubercles posteroventral to tympanum, and one tubercle on top of head midway between anterior corners of eyelids; skin on chest, belly, and posteroventral surfaces of thighs coarsely areolate; skin on other surfaces smooth. Anal opening a puckered aperture at upper level of thighs, surrounded by many small tubercles. Prevomerine odontophores large, round, narrowly separated prominences behind level of posterior margins of small round choanae, each having 5-6 teeth.

*Coloration in preservative.*—Dorsum pale tan with diffuse dark brown spot on head between posterior half of eyelids, pair of dark brown spots in scapular region, diffuse irregular dark brown marks in sacral region, dark brown bars on lips, and dark brown supratympanic stripe curving downward behind tympanum; limbs tan with distinct brown transverse bars; anterior and posterior surfaces of thighs brown; ventral surfaces of limbs tan; flanks, throat, and belly cream with bold dark brown reticulations.

*Coloration in life.*—Dorsum tan with dark brown markings; posterior thighs and ventral surfaces of hind limbs dark brown; throat pinkish cream with black flecks; flanks and belly cream with black reticulations; iris bronze with median horizontal dark reddish brown streak.

*Measurements.*—The holotype, an adult female, has the following dimensions (in mm): snout-vent length 39.2, tibia length 19.2, foot length 18.8, head length 14.1, head width 15.3, interorbital distance 5.0, width of eyelid 3.7, eye-nostril 4.5, diameter of eye 4.5, diameter of tympanum 1.4.

*Remarks.*—The only known specimen was on a bush at night in cloud forest.

*Etymology.*—The specific name is a patronym for Linda Trueb in recognition of her extensive collecting of frogs in South American cloud forests.



*Eleutherodactylus pharangobates* new species

(Fig. 2E)

*Holotype*.—KU 173236, an adult male, from Buenos Aires, 2,400 m, Departamento Cuzco, Perú (13°07'S; 71°28'W), one of a series collected by William E. Duellman and David C. Cannatella on 19 January 1977.

*Paratopotypes*.—KU 173237–54, same data and collectors.

*Diagnosis*.—A member of the *Eleutherodactylus unistrigatus* group characterized by: 1) skin on dorsum shagreened with dorsolateral fold; skin on venter areolate; 2) tympanum prominent; 3) snout long, sloping, acuminate in dorsal view, round in profile; 4) interorbital area flat, half again as wide as eyelid; crests absent; 5) prevomerine odontophores present or absent; 6) vocal slits present; vocal sac single, median, subgular; 7) first finger shorter than second; terminal discs truncate, twice width of digit; 8) fingers lacking lateral fringes; 9) ulnar folds and tubercles absent; 10) tubercles absent on heels and tarsi; 11) inner metatarsal tubercle low, flat, elliptical; outer tubercle small, round; 12) toes lacking lateral fringes; 13) dorsum yellowish tan to grayish tan with brown chevrons on body and diagonal marks on limbs; labial stripe and dorsolateral stripe (present or not) cream; venter gray with cream flecks; 14) snout-vent length 21.4–25.4 mm in males, 27.8–29.5 mm in females.

*Eleutherodactylus pharangobates* is like *E. cosnipatae* in size and general coloration, but the latter lacks dorsolateral folds and has lateral fringes on the fingers and toes and orange-red in the groin and thighs. *Eleutherodactylus danae* also has dorsolateral folds, but it has fringes on the fingers and toes and pale flecks on dark brown posterior surfaces of the thighs. The sympatric *E. granulosus* lacks dorsolateral folds and does not have the terminal digital discs expanded.

*Description*.—Body robust; head slightly longer than wide; snout long, sloping, acuminate in dorsal view, round in profile, projecting well beyond margin of jaw; top of head flat; interorbital distance 1.5 times width of eyelid; canthus angular; loreal region flat; lips rounded; nostrils slightly protuberant laterally; internarial area flat. Tympanum distinct, round, its upper margin covered by supratympanic fold, separated from eye by distance equal to half diameter of tympanum; tympanic annulus distinct.

Forearm moderately robust and short, lacking ulnar fold and tubercles; first finger slightly shorter than second; fingers lacking lateral folds; terminal discs truncate, twice width of digit; subarticular tubercles small round; palmar tubercle bifid; pollical tubercle large, ovoid, diffuse. Hind limbs moderately long, robust; tubercles absent on heel and tarsus; inner tarsal fold present on distal half of tarsus; inner metatarsal tubercle low, flat, elliptical; outer metatarsal tubercle small, round; lateral fringes absent on toes; subarticular tubercles small, round.

Skin on dorsum shagreened with single dorsolateral fold on each side and minute spinules on posterior part of body and dorsal surfaces of shanks; skin on throat, belly, and ventral surfaces of thighs coarsely areolate; skin on other surfaces smooth. Anal opening a puckered aperture at mid-level of thighs. Prevomerine odontophores absent in males; small oblique processes bearing 2–3 teeth in females; choanae small, round, widely separated; vocal slits, and large, single, median, subgular vocal sac present.

*Coloration in preservative.*—Dorsum grayish tan with dark brown markings consisting of: loreal stripe extending from tip of snout to eye and postorbital bar from eye to insertion of arm, usually short transverse stripe or pair of spots on snout, elongate mark between eyes, three chevrons on body, pair of bars in inguinal region, narrow transverse bars on limbs, and diagonal bars on flanks; dark marks narrowly bordered by cream or not; dorsolateral cream stripes in two (10%) of the specimens; edge of lip cream; anterior and posterior thighs brown; anal region dark brown. Throat dark gray brown with cream flecks; belly cream with gray flecks.

*Coloration in life.*—Dorsum yellowish tan to olive-tan with brown chevrons on back and diagonal marks on flanks, dorsolateral stripe (if present) and labial stripe pale yellowish tan, dorsum of hind limbs more orange in some individuals; canthal stripe dark brown. Groin and proximal anterior surface of hind limb pale orange or yellowish orange with grayish brown mottling; throat and belly yellow with gray spots to gray with yellow spots; ventral surfaces of hind limbs yellowish tan; iris bright bronze with broad red horizontal band; venter in juveniles bright yellow.

*Measurements.*—The dimensions (in mm) of the male holotype, range of variation in 11 males (means in parentheses), and one female are: snout-vent length 23.3, 21.4–25.4 (23.5), 27.8; tibia length 13.4, 12.7–14.5 (13.5), 16.8; foot length 12.2, 10.5–13.3 (12.1), 15.2; head length 9.1, 8.9–10.3 (9.4), 11.3; head width 8.8, 8.1–9.9 (8.7), 10.2; interorbital distance 3.1, 2.5–3.4 (3.05), 3.6; width of eyelid 2.4, 1.7–2.6 (2.13), 2.6; eye-nostril 2.7, 2.4–3.0 (2.71), 3.3; diameter of eye 2.8, 2.7–3.4 (2.91), 3.3; diameter of tympanum 1.4, 1.4–2.1 (1.52), 1.6. Seven juveniles have snout-vent lengths of 16.8–18.8 ( $\bar{x}$  = 17.6) mm.

*Remarks.*—Seventeen specimens (LSUMZ 32267, 32269–84) from Hacienda Huyro, 1,720 m elevation in the Umasbamba Valley, Departamento Cuzco, are referred to this species. This locality is  $\approx$ 150 km W of Buenos Aires. Included in the series are six gravid females having snout-vent lengths of 31.5–35.4 ( $\bar{x}$  = 33.7) mm.

A single male (AMNH 82514) was obtained in elfin forest at 1,870 m in the isolated Serranía de Sira, Departamento Huánuco. This locality is  $\approx$ 385 km NW of Buenos Aires. One specimen (USNM 146587) was taken in a bromeliad at 1,820 m, 10 km N Limbo, Departamento Cochabamba,

Bolivia, which is  $\approx 880$  km SSE of Buenos Aires. Thus, *E. pharangobates* has an extensive range along the Cordillera Oriental and associated ranges from central Perú to northern Bolivia.

At the type-locality all individuals were found on the cool, misty night of 19 January 1977; they were perched on low vegetation, principally ferns, on a moss-covered cliff. The call is a loud chirp with intermittent short squeaks. At Huyro, Richard Thomas found the frogs on herbaceous vegetation on a steep bank on 23 August–2 September 1974.

*Etymology*.—In allusion to the steep slopes inhabited by this species, the epithet is derived from the Greek *phar anx* and *bates*, and means one who frequents ravines.

*Eleutherodactylus salaputium* new species  
(Fig. 2F)

*Holotype*.—KU 162292, an adult male from the Río Cosñipata, 4 km SW Santa Isabel, 1,700 m, Departamento Cuzco, Perú ( $13^{\circ}05'S$ ;  $71^{\circ}18'W$ ), one of a series collected by William E. Duellman on 10 February 1975.

*Paratopotypes*.—KU 162291, 162293–97, collected by William E. Duellman and Linda Trueb on 10–11 February 1975.

*Diagnosis*.—A member of the *Eleutherodactylus unistrigatus* group characterized by: 1) skin of dorsum finely shagreened with small tubercles in scapular region; skin of venter weakly areolate; 2) tympanum and tympanic annulus prominent; 3) snout short, round in dorsal view and profile; 4) interorbital area flat, wider than eyelid; crests absent; 5) prevomerine odontophores nearly concealed in buccal tissue; 6) vocal slits present; vocal sac single, median, subgular; 7) first finger shorter than second; terminal discs truncate, three times width of digit; 8) fingers having lateral fringes; 9) ulnar tubercles present; 10) tubercles present on heels and tarsi; 11) inner metatarsal tubercle large, flat, elliptical; outer metatarsal tubercle small, conical; 12) toes having lateral fringes and basal webbing; 13) dorsum tan with dark brown markings; venter brown; 14) snout-vent length 16.3–18.6 mm in males.

The small size, dark venter, and absence of yellow or orange spots in the groin immediately distinguish *E. salaputium* from other upper Amazonian and southern Andean *Eleutherodactylus*.

*Description*.—Body moderately robust; head slightly longer than wide; snout short, bluntly rounded in dorsal view, round in profile, barely protruding beyond margin of lip; top of head flat; interorbital distance 1.2 times width of eyelid; canthus round; loreal region distinctly concave; lips round; nostrils slightly protuberant laterally; internarial area distinctly depressed. Tympanum distinct, round, its upper edge partially concealed by a supratympanic fold, separated from eye by distance slightly greater than diameter of tympanum; tympanic annulus distinct.



Forearm slender with row of low tubercles on ventrolateral edge; first finger noticeably shorter than second; fingers having lateral fringes extending to discs, which are truncate and about three times as wide as digit; subarticular tubercles moderately large, round; palmar tubercle tripartite; pollical tubercle ovoid. Hind limbs moderately long and slender with one low subconical tubercle on heel and two on outer edge of tarsus; inner tarsal fold present on distal one-fourth of tarsus; inner metatarsal tubercle large, flat, ovoid; outer metatarsal tubercle small, conical; lateral fringes on toes extending to expanded discs; basal webbing between third, fourth, and fifth toes; subarticular tubercles small, subconical.

Skin on dorsum finely shagreened with low tubercles in scapular region, in tympanic area, on dorsal surfaces of limbs, and in some specimens on back (see *Remarks*); skin on belly and ventral surfaces of thighs weakly areolate; skin on other surfaces smooth. Anal opening a puckered aperture at upper level of thighs. Prevomerine odontophores nearly concealed in buccal tissue, small prominences, each bearing 1–2 teeth, widely separated well behind posterior margins of small round choanae. Vocal slits and single, median, subgular sac present.

*Coloration in preservative*.—Dorsum pale brown with darker brown markings consisting of transverse bars on limbs, bars on upper and lower lips, supratympanic mark, and dorsal markings on body in four specimens consisting of brown interorbital mark, diagonal brown marks in scapular area and chevron in sacral region; in two specimens middorsal cream stripe bordered by dark brown; in one specimen entire dorsum reddish brown with brown longitudinal streaks and dorsolateral black borders. Flanks and thighs creamy tan with brown bars on thighs. Venter dusky tan to reddish brown.

*Coloration in life*.—Dorsum reddish brown with dark brown markings; middorsal stripe, if present, orange; groin and dorsal surfaces of thighs yellowish green with dark brown markings; venter gray; iris dull bronze with median horizontal reddish brown streak.

*Measurements*.—Five males have the following dimensions (in mm); the measurements of the holotype are given first, followed by the range of variation and the mean in parentheses: snout-vent length 17.9, 16.3–18.6 (17.4); tibia length 8.8, 8.4–10.0 (9.2); foot length 8.6, 7.8–8.6 (8.3); head length 7.0, 6.7–8.5 (7.3); head width 6.5, 6.2–7.6 (6.7); interorbital distance 2.1, 2.1–2.5 (2.2); width of eyelid 1.9, 1.7–1.9 (1.84); eye-nostril 2.0, 1.8–2.2 (1.96); diameter of eye 2.3, 2.1–2.5 (2.24); diameter of tympanum 1.0, 0.9–1.1 (0.98). Two juveniles have snout-vent lengths of 12.8 and 14.8 mm.

*Remarks*.—The three color morphs have different patterns of tubercles on the dorsum. The morph with the brown diagonal marks in the scapular area has small tubercles associated with the marks. In the two specimens, one of which is the holotype, having a middorsal stripe a row of tubercles

is present on either side of the stripe. The individual having a reddish brown dorsum with black dorsolateral borders has a row of prominent tubercles associated with the border and small tubercles associated with the dark streaks on the dorsum.

All individuals were found on low herbaceous plants in cloud forest at night.

*Etymology*.—The specific epithet selected for this small frog is the Latin *salaputium*, meaning dwarf.

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### Literature Cited

- Lynch, J. D. 1974. New species of frogs (Leptodactylidae: *Eleutherodactylus*) from the Amazonian lowlands of Ecuador. *Occas. Pap. Mus. Nat. Hist. Univ. Kansas* 31:1-22.
- . 1976. The species groups of South American frogs of the genus *Eleutherodactylus*. *Ibid.* 61:1-24.

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